**Listing of the Claims:**

1. **(previously presented)** A furnace assembly for heating an optical waveguide preform, the furnace assembly comprising:

a furnace including:

a muffle tube defining a furnace passage, the furnace passage having a length extending from a first end to a second end;

a top plate mounted and resting on a terminal end of the muffle tube at the second end and an central opening defined in the top plate, said top plate including a lower surface in contact with the terminal end and an upper surface opposite the lower surface; and

a heating device operative to heat the furnace passage;

a process gas supply providing a process gas to the furnace passage;

a handle disposed in the furnace passage, said handle including a coupling portion which is adapted to hold the waveguide preform and the handle extends through the exit opening;

a flow shield positioned between the first and second ends and extending across the furnace passage between the handle and the muffle tube, the flow shield arranged and configured to restrict flow of the process gas from the first end to the second end of the furnace passage; and

a washer mounted about the handle, contacting the upper surface of the top plate and covering a portion of the central opening.

2. **(original)** The furnace assembly of Claim 1 wherein the flow shield defines an isolation chamber between the flow shield and the second end.

3. **(original)** The furnace assembly of Claim 1 wherein the flow shield has a peripheral edge adjacent the muffle, and the peripheral edge and the muffle define a marginal gap therebetween having a width of between about 2.5 mm and 25 mm.

4. **(original)** The furnace assembly of Claim 1 wherein the flow shield has a thickness greater than about 6 mm.

5. **(previously presented)** The furnace assembly of Claim 1 wherein:
the handle extends through the top plate at the second end of the passage; and
the flow shield is disposed between the coupling portion and the top plate.

6. **(original)** The furnace assembly of Claim 1 wherein the flow shield is coupled to the handle.

7. **(previously presented)** The furnace assembly of Claim 1 wherein the handle includes a spacer longitudinally separating the flow shield from the coupling portion.

8. **(original)** The furnace assembly of Claim 7 wherein the spacer separates the flow shield from the preform a distance of at least 50 mm.

9. **(original)** The furnace assembly of Claim 1 wherein the flow shield is formed of at least one material selected from the group consisting of fused silica, fused quartz, ceramic, silicon carbide, ceramic coated fused silica, and ceramic coated fused quartz, and combinations thereof.

10. **(original)** The furnace assembly of Claim 1 wherein the handle is formed of at least one material selected from the group consisting of fused silica, fused quartz, ceramic, ceramic coated fused silica, and ceramic coated fused quartz, and combinations thereof.

11. **(original)** The furnace assembly of Claim 1 wherein the furnace is a waveguide preform holding furnace.

12. **(original)** The furnace assembly of Claim 1 wherein the furnace is a waveguide preform consolidation furnace.

13. **(withdrawn)** The furnace assembly of Claim 1 further comprising a second flow shield extending across the furnace passage between the handle and the muffle, the first and second flow shields being arranged and configured to restrict flow of the process gas from the first end to the second end, wherein the second flow shield is spaced apart from the first flow shield along the length of the furnace passage.

14. **(withdrawn)** The furnace assembly of Claim 13 including a spacer positioned between the first and second flow shields.

15. **(withdrawn)** The furnace assembly of Claim 1 further comprising a second flow shield extending across the furnace passage between the handle and the muffle, the first and second flow shields being arranged and configured to restrict flow of the process gas from the first end to the second end, wherein the second flow shield is located substantially immediately adjacent the first flow shield.

16. **(withdrawn)** The furnace assembly of Claim 1 wherein:
the furnace includes an end wall;
the flow shield is spaced apart from the end wall and connected thereto by at least one connecting member; and
the handle is free to move relative to the flow shield.

17. **(withdrawn)** The furnace assembly of Claim 1 including a longitudinally extending shield collar extending from the flow shield toward one of the first and second ends, the shield collar including an outer surface facing the muffle, wherein the outer surface and the muffle define a lengthwise restrictive flow passage therebetween.

18. **(withdrawn)** The furnace assembly of Claim 17 wherein the restrictive flow passage has a gap dimension between the outer face and the muffle of between about 2.5 and 25 mm.

19. **(withdrawn)** The furnace assembly of Claim 17 wherein the restrictive passage has a length of between about 25 and 250 mm.

20. **(withdrawn)** The furnace assembly of Claim 17 including a longitudinally extending second shield collar disposed within the first shield collar and including an inner surface facing the handle, wherein the inner surface and the handle define a lengthwise second restrictive passage therebetween.

21. **(withdrawn)** The furnace assembly of Claim 20 wherein the second restrictive passage has a gap width between the inner surface and the handle of between about 1 and 20 mm.

22. **(withdrawn)** The furnace assembly of Claim 20 wherein the second restrictive passage has a length of between about 25 and 250 mm.

23. **(withdrawn)** The furnace assembly of Claim 20 wherein:
the furnace includes an end wall and an exit opening defined in the end wall;
the handle extends through the exit opening; and
the second shield collar extends from the end wall into the furnace passage and surrounds the exit opening.

24. **(withdrawn)** The furnace assembly of Claim 1 wherein:
the furnace includes an end wall and an exit opening defined in the end wall; and
the flow shield comprises a shield collar extending from the end wall into the furnace passage and surrounding the exit opening.

25. **(withdrawn)** The furnace assembly of Claim 24 wherein the shield collar forms a lengthwise restrictive flow passage with at least one of the muffle and the handle.

26. **(withdrawn)** The furnace assembly of Claim 25 wherein the handle extends through the exit opening and the shield collar and the muffle define a first lengthwise restrictive flow passage therebetween and the shield collar and the handle define a second lengthwise restrictive flow passage therebetween.

27. **(canceled)**

28. **(canceled)**

29. **(withdrawn)** The furnace assembly of Claim 1 including:
a supply of a second process gas; and

a gas port in fluid communication with the second process gas supply and positioned to direct the second process gas into the furnace passage adjacent a side of the flow shield opposite the preform.

30. **(withdrawn)** The furnace assembly of Claim 29 wherein the first and second process gases are the same.

31. **(withdrawn)** The furnace assembly of Claim 30 wherein the first and second process gas supplies are the same.

32. **(withdrawn)** The furnace assembly of Claim 29 wherein the second process gas is selected from the group consisting of Ar, He, and $N_2$, and mixtures thereof.

33. **(withdrawn)** The furnace assembly of Claim 29 wherein the gas port is formed in the handle, the handle further comprising a handle passage extending through the handle and fluidly connecting the second process gas supply and the gas port.

34. **(withdrawn)** The furnace assembly of Claim 33 further comprising a second flow shield extending across the furnace passage between the handle and the muffle, the first and second flow shields being arranged and configured to restrict flow of the first process gas from the first end to the second end, wherein:
the second flow shield is spaced apart from the first flow shield along the length of the furnace passage; and
the gas port is positioned between the first and second flow shields.

35. **(withdrawn)** The furnace assembly of Claim 1 including a processing gas port in fluid communication with the process gas supply and positioned to direct the process gas into the furnace passage adjacent a side of the flow shield closest to the preform.

36. **(withdrawn)** The furnace assembly of Claim 1 wherein the handle is free to move relative to the flow shield and the muffle includes a ledge adapted to support the flow shield.

37. **(withdrawn)** The furnace assembly of Claim 35 wherein the process gas is selected from the group consisting of $Cl_2$, $SiF_4$, $CF_4$, $SF_6$, $NF_3$, $GeCl_4$, $SiCl_4$, $POCl_3$, $BCl_3$, $BF_3$, $PCl_3$, $C_2F_6$, and CO, and mixtures thereof.

38. **(original)** The furnace assembly of Claim 1 wherein the handle is movable relative to the muffle and the flow shield is mounted on the handle for movement therewith.

39. **(original)** The furnace assembly of Claim 38 including a drive assembly operable to translate the handle and the flow shield relative to the muffle.

40. **(original)** The furnace assembly of Claim 38 including a drive assembly operable to rotate the handle and the flow shield relative to the muffle.

41. **(previously presented)** A furnace assembly adapted to heat an optical fiber preform, comprising:

a muffle tube defining a furnace passage, the passage including a length extending from an inlet opening at a first end to an outlet opening at a second end, and a flange on the second end,

a top plate mounted on a top of the muffle tube and covering the second end and the outlet opening and including an central opening therein, said top plate including a lower surface in contact with the flange and an upper surface opposed thereto,

a process gas supply adapted to supply a process gas in the passage directed from the first end to the second end,

a handle adapted to suspend the preform within the passage,

a flow shield positioned in the passage between the preform and the second end and extending between the handle and the muffle tube, wherein the flow shield is configured to enable restriction of flow of the process gas, and

a washer mounted about the handle and in contact with the upper surface of the top plate and covering a portion of the central opening.

42. **(previously presented)** A furnace assembly adapted to heat an optical fiber preform, said assembly comprising:

a muffle tube including a tubular body and a passage;

a top plate having a lower surface mounted in contact with an end of the muffle tube and an upper surface opposite the lower surface, the top plate extending radially inward from the tubular body and including a central opening therein;

a gas supply for supplying process gas to the passage;

a handle traversing the central opening in the top plate and adapted to suspend the preform in the passage from a coupling portion formed on a lower end of the handle; and

a flow shield positioned in the passage between the coupling portion and the top plate, wherein the flow shield is configured such that a radial peripheral edge of the flow shield and a cylindrical inside surface of the muffle tube form a marginal gap having a width of between 2.5 and 25 mm to enable restriction of the gas; and

a washer positioned over the central opening and in contact with the upper surface of the top plate, the handle extending through the washer wherein the washer inhibits air entry into the passage.

43. **(canceled)**

44. **(withdrawn)** A method of manufacturing an optical fiber preform, comprising the steps of:

flowing a process gas in a furnace passage of a muffle tube from a first end to a second end, the furnace passage having the optical fiber preform mounted therein, and

restricting flow of the process gas using a flow shield positioned in the passage between the preform and the second end and extending between a handle and the muffle tube.

45. **(withdrawn)** The method of Claim 44 wherein the process gas is flowed through the muffle tube at a rate of no more than 30 slpm.

46. **(withdrawn)** The method of Claim 44 wherein the process gas is flowed through the muffle tube at a rate of no more than 10 slpm.

47. **(previously presented)** A furnace assembly for heating an optical waveguide preform, the furnace assembly comprising:

a furnace including:

a muffle tube defining a furnace passage, the furnace passage having a length extending from a first end to a second end;

a top plate mounted on a terminal end of the muffle tube at the second end, said top plate including a lower surface, an upper surface opposed to the first surface, and a central opening defined in the top plate; and

a heating device operative to heat the furnace passage;

a process gas supply providing a process gas to the furnace passage;

a handle disposed in the furnace passage, said handle including a coupling portion which is adapted to hold the waveguide preform and the handle extends through the central opening;

a flow shield positioned between the first and second ends and extending across the furnace passage between the handle and the muffle tube, the flow shield arranged and configured to restrict flow of the process gas from the first end to the second end of the furnace passage; and

a plurality of washers mounted above the top plate and about the handle and covering a portion of the exit opening wherein at least one of the washers is in contact with the top plate and at least two of the washers are in contact with each other.

48. **(previously presented)** A furnace assembly, comprising:

a furnace including:

a muffle tube defining a furnace passage, the furnace passage having a length extending from a first end to a second end;

a top plate mounted on top of the muffle tube at the second end, the top plate having a central opening formed therein; and

a heating device operative to heat the furnace passage;

a process gas supply providing a process gas to the furnace passage;

a handle disposed in the furnace passage and extending through the central opening, the handle including a coupling portion;

a flow shield mounted on the handle and positioned between the first and second ends and extending across the furnace passage between the handle and the muffle tube, the flow shield arranged and configured to restrict flow of the process gas from the first end to the second end of the furnace passage;

a cylindrical spacer mounted about the handle and spacing the flow shield from the coupling portion; and

a plurality of washers mounted above the top plate and about the handle and at least one washer is in contact with the top plate and is covering a portion of the central opening and at least two of the plurality of washers are in contact with each other.